Table 9.1 | Main features of the Atmosphere–Ocean General Circulation Models (AOGCMs) and Earth System Models (ESMs) participating in Coupled Model Intercomparison Project Phase 5 (CMIP5), and a comparison with Coupled Model Intercomparison Project Phase 3 (CMIP3), including components and resolution of the atmosphere and the ocean models. Detailed CMIP5 model description can be found in Table 9.A.1 (* refers to Table 9.A.1 for more details). Official CMIP model names are used. HT stands for High-Top atmosphere, which has a fully resolved stratosphere with a model top above the stratopause. AMIP stands for models with atmosphere and land surface only, using observed sea surface temperature and sea ice extent. A component is coloured when it includes at least a physically based prognostic equation and at least a two-way coupling with another component, allowing climate feedbacks. For aerosols, lighter shading means 'semi-interactive' and darker shading means 'fully interactive'. The resolution of the land surface usually follows that of the atmosphere, and the resolution of the sea ice follows that of the ocean. In moving from CMIP3 to CMIP5, note the increased complexity and resolution as well as the absence of artificial flux correction (FC) used in some CMIP3 models.

	Model name		AOGCM					ESM			
			Atmos	Land Surface	Ocean	Sea-Ice	FC	Aerosol	Atmos Chem	Land Carbon	Ocean BGC
CMIP5	ACCESS1.0, ACCESS1.3	Australia									
	BCC-CSM1.1, BCC-CSM1.1(m)	China									
	BNU-ESM	China									
	CanCM4	Canada									
	CanESM2										
	CCSM4	USA									
	CESM1 (BGC)										
	CESM1 (WACCM)		HT								
	CESM1 (FASTCHEM)										
	CESM1 (CAM5)										
	CESM1 (CAM5.1-FV2)	USA									
	CMCC-CM, CMCC-CMS	Italy	HT								
	CMCC-CESM		HT								
	CNRM-CM5	France									
	CSIRO-Mk3.6.0	Australia									
	EC-EARTH	Europe									
	FGOALS-g2	China									
	FGOALS-s2										
	FIO-ESM v1.0	China									
	GFDL-ESM2M, GFDL-ESM2G	USA									
	GFDL-CM2.1										
	GFDL-CM3		HT								
	GISS-E2-R, GISS-E2-H	USA	HT					p2,p3*	p2, p3*		
	GISS-E2-R-CC, GISS-E2-H-CC		HT					p2,p3*	p2, p3*		
	HadGEM2-ES	UK									
	HadGEM2-CC		HT								
	HadCM3										
	HadGEM2-AO	Korea									
	INM-CM4	Russia									
	IPSL-CM5A-LR / -CM5A-MR / -CM5B-LR	France	HT								
	MIROC4h, MIROC5	Japan	HT								
	MIROC-ESM		HT								
	MIROC-ESM-CHEM		HT								
	MPI-ESM-LR / -ESM-MR / -ESM-P	Germany	HT								
	MRI-ESM1	Japan	HT								
	MRI-CGCM3		HT								
	NCEP-CFSv2	USA									
	NorESM1-M	Norway									
	NorESM1-ME										
AMIP	GFDL-HIRAM C180 / -HIRAM C360	USA									
	MRI-AGCM3.2S / -AGCM3.2H	Japan									
CMIP3	BCC-CM1	China					FC				
	BCCR-BCM2.0	Norway									
	CCSM3	USA									
	CGCM3.1(T47)	Canada					FC				
	CGCM3.1(T63)						FC				
	CNRM-CM3	France									
	CSIRO-MK3.0, CSIRO-MK3.5	Australia									
	ECHAM5/MPI-OM	Germany									
	ECHO-G	D/Korea					FC				
	FGOALS-g1.0	China									
	GFDL-CM2.0	USA									
	GFDL-CM2.1										
	GISS-AOM	USA									
	GISS-EH										
	GISS-ER										
	INGV-ECHAM4	Italy									
	INM-CM3.0	Russia					FC				
	IPSL-CM4	France									
	MIROC3.2(hires)	Japan	HT								
	MIROC3.2(medres)										
	MRI-CGCM2.3.2	Japan					FC				
	NCAR-PCM	USA									
	UKMO-HadCM3	UK									
	UKMO-HadGEM1										

Increasing complexity

Increasing resolution Atmosphere / Ocean
(total number of horizonal grid points)
8000 30000 52000 12000 50000 110000